Environmental Standards for Alberta's Livestock Industry

2004 Reference Guide

Agricultural Operation Practices Act (AOPA)

Second Edition

A guide to the legislation and regulations for confined feeding operations (CFOs) and seasonal feeding and bedding sites in Alberta, including 2004 amendments.

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DISCLAIMER: This guide summarizes important aspects of the Agricultural Operation Practices Act and the Natural Resources Conservation Board process. The document is not intended as legal advice, but as an interpretive document to the Agricultural Operation Practices Act and regulations. The responsibility is on the producer/operator to ensure due diligence has been followed. The Agricultural Operation Practices Act and Natural Resources Conservation Board Act, and regulations under these Acts should be referred to for legal definitions and for the specific requirements at each stage of the process. This document has been reviewed by the Natural Resources Conservation Board and Alberta Agriculture, Food and Rural Development.

Alberta
AGRICULTURE, FOOD AND RURAL DEVELOPMENT

OVERVIEW: THE AGRICULTURAL OPERATION PRACTICES ACT (AOPA)

Amendments to the Agricultural Operation Practices Act (AOPA) were proclaimed on January 1, 2002, launching a new standard for environmental management in Alberta's livestock industry. Further amendments based on a targeted review of the legislation were made in 2004 and are detailed in this guide. The amendments clarify and enhance the province's ability to deal with nuisance, such as odour, noise, dust, smoke or other disturbances resulting from an agricultural operation.

AOPA lays out clear manure management standards for all farming and ranching operations in Alberta. It also provides producers and other stakeholders with a one-window process for siting new and expanding confined feeding operations (CFOs).

This Reference Guide was developed to assist producers in understanding the regulations and their obligations as defined in AOPA. It is part of an extensive communications effort to keep producers and the public informed about the CFO application process and environmental standards. Development of the Guide was led by Alberta Agriculture, Food and Rural Development (AAFRD), in co-operation with the Natural Resources Conservation Board (NRCB).

KEY CONTACTS (More information on page 16)

Alberta Agriculture, Food and Rural Development (AAFRD). Responsible for the legislation and associated regulations including updating the legislation, to ensure they meet the needs of the livestock industry and the public. AAFRD takes the lead role in providing extension services, information materials and technology transfer of applied research related to AOPA.

The Natural Resources Conservation Board (NRCB). Responsible for administering the regulations under AOPA. It is an independent, quasi-judicial Board that reports to the Minister of Sustainable Resource Development. NRCB Approval Officers answer process-related application questions, inform producers as to what information is required to support their applications, and approve or deny applications, including those for ancillary structures associated with a CFO. As part of this mandate, the NRCB is responsible for monitoring NRCB issued-permits (Approvals, Registrations or Authorizations) and existing CFO municipal permits, and enforcing compliance with permit conditions and province-wide AOPA environmental standards. The NRCB's Board is responsible for the review of Approval Officer and Inspector decisions when requested by directly affected parties.

Municipal governments. Invited to provide input on all applications within their municipal boundaries and to develop land-use plans that identify where new and expanding CFOs would not be compatible with current or future land uses. Municipal governments are considered directly affected parties for all CFO applications and their views are an important part of decisions for siting new and expanding CFOs.

The Farmers' Advocate of Alberta. Deals with nuisance cases, such as those for odour, noise, dust, smoke or other disturbances resulting from agricultural operations. Complaints about livestock operations are first reviewed by the NRCB to determine whether the operation is in compliance with the standards and regulations. The Minister of AAFRD can direct the Farmers' Advocate to attempt to mediate a dispute. If the complaint is not resolved, the Minister of AAFRD can direct the Farmers' Advocate to establish an Agricultural Practices Review Committee to determine whether an agricultural operation is following generally accepted farming practices. This committee will also attempt to further mediate complaints, and may prepare a report that can be used either by the NRCB in an enforcement order or by the court system if legal action is taken (Act, Section 3).

DEFINING CFOs

CFOs. Fenced or enclosed land or buildings where livestock are confined for the purposes of growing, sustaining, finishing or breeding by means other than grazing, and any other building or structure directly related to that purpose. Backgrounding operations are also considered to be CFOs. AOPA applies to a variety of livestock categories including beef, dairy, swine, poultry, turkeys, ducks, geese, horses, sheep, goats, bison, cervid and wild boars. CFOs do not include residences, livestock seasonal feeding and bedding sites, equestrian stables, auction markets, race tracks or exhibition grounds (Act, Section 1).

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Examples of How AOPA Applies to Livestock Operations

Livestock operations in Alberta will be affected to varying degrees by the 2004 amended AOPA legislation. The following examples illustrate how different types of operations might be affected.

EXISTING CFOs AS OF JANUARY 1, 2002

Capacity. CFOs can operate at their January 1, 2002 capacity without obtaining a permit from the NRCB.

Existing permits. Permits previously issued by a municipality or health authority will be considered an Approval, Registration or Authorization under AOPA.

Maintenance. An Approval, Registration or Authorization is not required when reconstructing or maintaining existing facilities other than a manure collection area or manure storage facility.

Manure storage. Operations are not required to meet the manure storage regulations unless they are modifying or expanding, or they pose a risk to the environment.

Manure application. A person applying manure to land must follow the incorporation regulations, soil nitrate-nitrogen and salinity limits, and setbacks.

Record keeping. Any person who applies or transfers more than 500 tonnes of manure, composting materials or compost per year must keep records.

NEW/EXPANDING CFOs

Minimum Distance Separation (MDS). MDS is a setback or buffer established between a CFO facility and adjacent land uses to minimize odour nuisance.

Affected party. People who are determined by the NRCB to be affected parties can provide input into a new or expanding operation.

Permits. A permit must be issued by the NRCB before construction or expansion of a CFO can begin. Regulatory requirements for CFOs are determined based on the category and type of livestock, and the number of animals.

Application process. A person can obtain application forms and process guides from the NRCB Web site (www.nrcb.gov.ab.ca) and from NRCB offices.

Manure storage. All operations must meet the regulations for manure storage to protect water quality.

Manure application. A person applying manure to land must follow the incorporation regulations, nitrate-nitrogen and soil salinity limits, and setbacks.

Record keeping. Any person who applies or transfers more than 500 tonnes of manure, composting materials or compost per year must keep records.

COW/CALF PRODUCERS

Seasonal feeding and bedding sites (wintering sites) and livestock corrals. Producers must manage these sites according to AOPA requirements.

Short term manure storage. Standards are set to locate short term solid manure storage to protect water quality and minimize nuisance impacts to neighbours.

Manure application. A person applying manure to land must follow the incorporation regulations, nitrate-nitrogen and soil salinity limits, and setbacks.

Record keeping. Any person who applies or transfers more than 500 tonnes of manure, composting materials or compost per year must keep records.

Key Points in the Legislation

Under AOPA, there are **three different types of permits** for building or expanding a CFO. The regulatory requirements for CFOs are determined based on the category and type of livestock, and the number of animals (Matters Regulation, Schedule 2). Large CFOs require an **Approval,** while small and medium-size operations require a **Registration.** Operators are required to obtain an **Authorization** for the construction, modification and/or expansion of a manure storage facility that is intended for containment of manure for seven months or more in any calendar year and has capacity for 500 tonnes or more of manure, composting materials or compost (Matters Regulation, Section 4).

Without a prior Approval, Registration or Authorization, **construction or expansion of a CFO cannot begin.** Operators who hold an Approval, Registration or Authorization must comply with the terms and conditions set out in these permits (Act, Section 13). If a CFO is sold or transferred to a new owner, the new owner must notify the NRCB of the **change in ownership** (Act, Section 28).

AOPA sets out the **Minimum Distance Separation (MDS)** required between CFOs and neighbouring residences to reduce nuisance (Standards and Administration Regulation, Section 3). The neighbouring land uses in existence on the day an application is received by the NRCB are used in determining the required MDS (See page 7).

AOPA includes provisions for the Approval Officer to obtain **public input** (Approvals and Registrations only). AOPA defines who should be notified of a proposed or expanding CFO. It may include neighbouring residences and water users.

AOPA regulations define who an **affected party** is. Approvals, Registrations or Authorizations each have separate criteria for who is considered an affected party in an application.

Seasonal feeding and bedding sites and livestock corrals are not subject to the CFO application process, but must be sited or designed to protect surface water from manure contamination (Standards and Administration Regulation, Section 4).

All operators must **manage and apply manure, composting materials and compost** in accordance with the nutrient management requirements in the Standards and Administration Regulation (Sections 23 to 25). However, operators may seek a variance from the NRCB that authorizes a higher application rate if the NRCB is satisfied it will benefit the soil.

Compost containing manure will be treated like manure. AOPA regulates all agricultural composting from primary agriculture at agricultural operations, except the composting of carcasses or parts of carcasses.

AOPA includes standards for **solid and liquid manure storage, and collection areas and facilities.** These requirements apply to all producers, not just CFOs. The regulations specify how manure storage facilities and collection areas are to be constructed, sited and operated.

Any operator who applies or transfers, and any person who receives more than 500 tonnes of manure, composting materials or compost must **keep records** and perform soil tests (Standards and Administration Regulation, Section 28).

All CFOs or manure storage facilities that existed prior to January 1, 2002, are deemed to have an Approval, Registration or Authorization under AOPA. The NRCB will have sole responsibility for enforcing conditions on existing permits pertaining to CFOs, including non-manure related conditions such as road-use agreements. The NRCB has the authority to amend the terms and conditions in permits previously issued for CFOs.

Existing CFOs do not have to change, modify or construct a building or structure to meet the standards unless there is a risk to the environment or an appropriate disturbance as determined by the NRCB. The NRCB can investigate any risk to the environment or an inappropriate disturbance and enforce terms and conditions in existing development permits or enforce compliance issues relating to any existing operation.

The standards do not apply to an existing building or structure until a CFO is expanded. When the existing CFO expands, only the new or expanded portion or manure storage facility must meet the new standards in the regulations. If a risk to the environment is determined, the NRCB may require the risk to be addressed.

AOPA allows an inspector to enter and **inspect any building** or land, other than a private dwelling-place, believed to be used in connection with an agricultural operation (Act, Section 30).

The NRCB may issue an **enforcement order** to compel producers to rectify a situation (Act, Section 39). If a situation poses an immediate environmental risk, the NRCB may issue an emergency order and take corrective action. If a producer refuses, hinders, or interferes with a field inspector during a field inspection, a field inspector may apply to the Court of Queen's Bench for a court order. A person who contravenes the regulations or certain sections of AOPA may be liable for a fine (Act, Sections 35 and 36).

LATEST INFORMATION

Check the Web site for the latest information on AOPA

Web site: www.agric.gov.ab.ca
(Click Search and type in "AOPA" or click on Livestock, Livestock Production, AOPA)

The standards and regulations apply to:

- The owner or operator of a confined feeding operation (CFO) for which an Approval or Registration is required under AOPA.
- The owner or operator of a manure storage facility for which an Authorization is required under AOPA.
- The owner or operator of a seasonal feeding and bedding site.
- The owner or operator of a manure collection area or a manure storage facility.
- A person who applies manure, composting materials or compost.

A person to whom these standards and regulations apply must maintain the agricultural operation in accordance with AOPA (Standards and Administration Regulation, Section 2).

DEFINITIONS

Aquifer. An underground water-bearing formation capable of yielding water (as defined under the Water Act).

Catch basin. An excavation, diked or walled structure, or a combination of structures, that is designed to intercept and store runoff water (Standards and Administration Regulation, Section 1).

Common body of water. The bed and shore of an irrigation canal, drainage canal, reservoir, river, stream, creek, lake, marsh, slough or other exposed body of water, and a waterworks system (as defined by the Environmental Protection and Enhancement Act). A waterworks system is any system providing potable water to a municipality, municipal development, industrial development, privately owned development, private utility or watering point, and includes any or all of the following components (Standards and Administration Regulation, Section 1):

- Water wells connected to water supply lines, surface water intakes or infiltration galleries that constitute the water supply.
- Water supply lines.
- On-stream and off-stream water storage facilities.
- Water pumphouses.
- Water treatment plants.
- Potable water transmission lines.
- Potable water storage facilities.
- Potable water pumping facilities.
- Water distribution systems.

A commom body of water does not include:

- A reservoir, lake, marsh or slough that is completely surrounded by private land controlled by the owner or operator and has no outflow going directly beyond the private land to a drainage canal, reservoir, river, permanent stream or creek, lake or potable water source that is being used for human or livestock consumption.
- An irrigation or drainage canal that is completely surrounded by private land controlled by the owner or operator and has no outflow going beyond the private land.
- A roadside ditch.
- A wastewater system as defined by the Environmental Protection and Enhancement Act, is a system for collecting, treating and disposing of wastewater, and includes:
  - Wastewater treatment plants.
  - Sewers and pumping stations that transport untreated wastewater from a wastewater collection system to a wastewater treatment plant.
  - Facilities that provide storage to treated wastewater.
  - Wastewater sludge treatment and disposal facilities.
  - Sewers that transport treated wastewater from a wastewater treatment plant to the place where it is disposed of.
  - Treated wastewater outfall facilities, including the outfall structures to a watercourse or any appurtenances of disposal of treated wastewater to land or to wetlands.
- A storm drainage system (as defined by the Environmental Protection and Enhancement Act) is any system for collecting, storing and disposing of storm drainage and includes:
  - The sewers and pumping stations that make up the storm drainage collection system.
  - The storm drainage storage, management and treatment facilities that buffer the effects of the peak runoff or improve the quality of the storm water.
  - The sewers and pumping stations that transport storm drainage to the location where it is treated or disposed of.
  - The storm drainage outfall structures leading directly to a drainage canal, reservoir, river, permanent stream or creek, lake or potable water source that is being used for human or livestock consumption.
- A temporary stream on private land controlled by the owner or operator that has no outflow going beyond the private land directly to a drainage canal, reservoir, river, permanent stream or creek, lake or potable water source that is being used for human or livestock consumption.

DEFINITIONS *continued*

Compost. Compost is a solid mature product resulting from composting, but does not include compost to which the Fertilizers Act (Canada) applies (Act, Section 1). For storage and application purposes, compost is treated the same as manure.

Composting. A managed process of bio-oxidation of composting materials, including a thermophilic phase.

Composting materials. Organic material, to be used in composting, generated by an agricultural operation from the raising of livestock, including game production animals (within the meaning of the Livestock Industry Diversification Act) and poultry, as well as the production of agricultural field crops, fruit, vegetables, sod, trees, shrubs and other specialty horticultural crops, or the production of eggs and milk. Also includes other substances permitted by the regulations, but does not include carcasses or parts of carcasses.

Confined feeding operation (CFO). Fenced or enclosed land or buildings where livestock are confined for the purpose of growing, sustaining, finishing or breeding by means other than grazing and any other building or structure directly related to that purpose. Does not include residences, seasonal livestock feeding and bedding sites, equestrian stables, auction markets, racetracks or exhibition grounds (Act, Section 1).

Manure. Livestock excreta, associated feed losses, bedding, litter, soil and wash water. Does not include manure to which the Fertilizers Act (Canada) applies (Act, Section 1).

Manure collection area. The floor of a barn, the under-floor pits of a barn, the floor of a feedlot pen and a catch basin where manure collects. Does not include the floor of a livestock corral (Act, Section 1).

Manure storage facility. A facility for storing manure, composting materials or compost, and a composting facility. Does not include such a facility at an equestrian stable, an auction market, a racetrack or exhibition grounds (Act, Section 1).

Runoff. Liquid that drains as surface flow out of an agricultural operation or part of an agricultural operation, including rainwater and meltwater (Standards and Administration Regulation, Section 1).

Run-on. Liquid that drains as surface flow onto an agricultural operation or part of an agricultural operation, including rainwater and meltwater (Standards and Administration Regulation, Section 1).

Seasonal feeding and bedding sites. An overwintering site where livestock are fed and sheltered (Act, Section 1).

Short term solid manure storage. Defined as an accumulated total of not more than seven months over a three-year period. Does not apply to feedlots or livestock corrals (Standards and Administration Regulation, Section 5).

Water table. The top of the water saturation zone where water pressure equals atmospheric pressure regardless of whether the water is usable (Standards and Administration Regulation, Section 1).

Water well. As defined under the Water Act, an opening in the ground, whether drilled or altered from its natural state, that is used for:

- Producing groundwater for any purpose.
- Obtaining data on groundwater.
- Recharging an underground formation from which groundwater can be recovered.

Includes any related equipment, buildings, structures and appurtenances.

Siting Requirements under AOPA

Siting is an integral part of protecting the environment, surface and groundwater, and minimizing nuisance.

Location of livestock production facilities is an important component of developing or expanding a livestock facility. This section outlines the requirements for siting operations and facilities within an operation.

SITING TO MINIMIZE NUISANCE

Determining the Minimum Distance Separation. The Minimum Distance Separation (MDS) is a setback or buffer established between a CFO facility and adjacent land uses to minimize odour nuisance. It is measured from the outside walls of neighbouring residences, urban fringe boundary, or town boundary to the point closest to the applicant's:

- Livestock facility.
- Manure storage facility.
- Catch basin.
- Feeding pen or barn.
- Milking facility.
- Compost area.

For the purpose of determining the MDS, the following areas are not considered to be part of the livestock facility: feed handling areas, feed storage areas, offices, water supply, land on which manure, composting materials and compost is to be spread and grazing areas (Standards and Administration Regulation, Schedule 1).

Odour production. A number of factors contribute to odour production, including nuisance value of livestock, technology of production systems and number of animals. This is described as a Livestock Siting Unit (LSU). The use of new technology is encouraged to reduce MDS.

Technology factor. Allows the NRCB to reduce the MDS if an applicant incorporates technology that reduces nuisance from an operation.

Livestock Siting Unit (LSU). A method for comparing the odour potential of livestock facilities based on the type of livestock, manure production and manure handling system and is the basis for determining the MDS. The LSU for each type of livestock is determined by multiplying the total number of animals (not animal units) by the appropriate LSU factor. The LSUs for each livestock type are then added together for the total LSUs.

Odour objective. Describes the sensitivity or assumed tolerance level of neighbouring land uses and is based on four categories of land zoning. The category, once determined, indicates the odour objective used in the calculation of MDS.

Dispersion factor. A dispersion factor allows for a variance (possible reduction) to the MDS, based on unique climatic and topographic influences at the site that can influence odour dispersion. They include:

- Topography. The effect of topographical features, such as hills and valleys, on air dispersion.
- Screening. The effect of natural or constructed screening, such as windbreaks, trees, fences or screens, that reduces wind at the manure storage facility.
- Microclimate. Meteorological data may show a significant alteration in odour intensity or frequency in relation to neighbouring land use. Some of these factors include temperature, humidity, wind direction and intensity.

Expansion factor. This is only applicable to operations that are increasing the size of the facility to store more manure or to accommodate more livestock. This factor may reduce the MDS requirement and can only be determined by the NRCB (Standards and Administration Regulation, Schedule 1).

MINIMUM DISTANCE SEPARATION RULES

(Standards and Administration Regulation, Section 3)

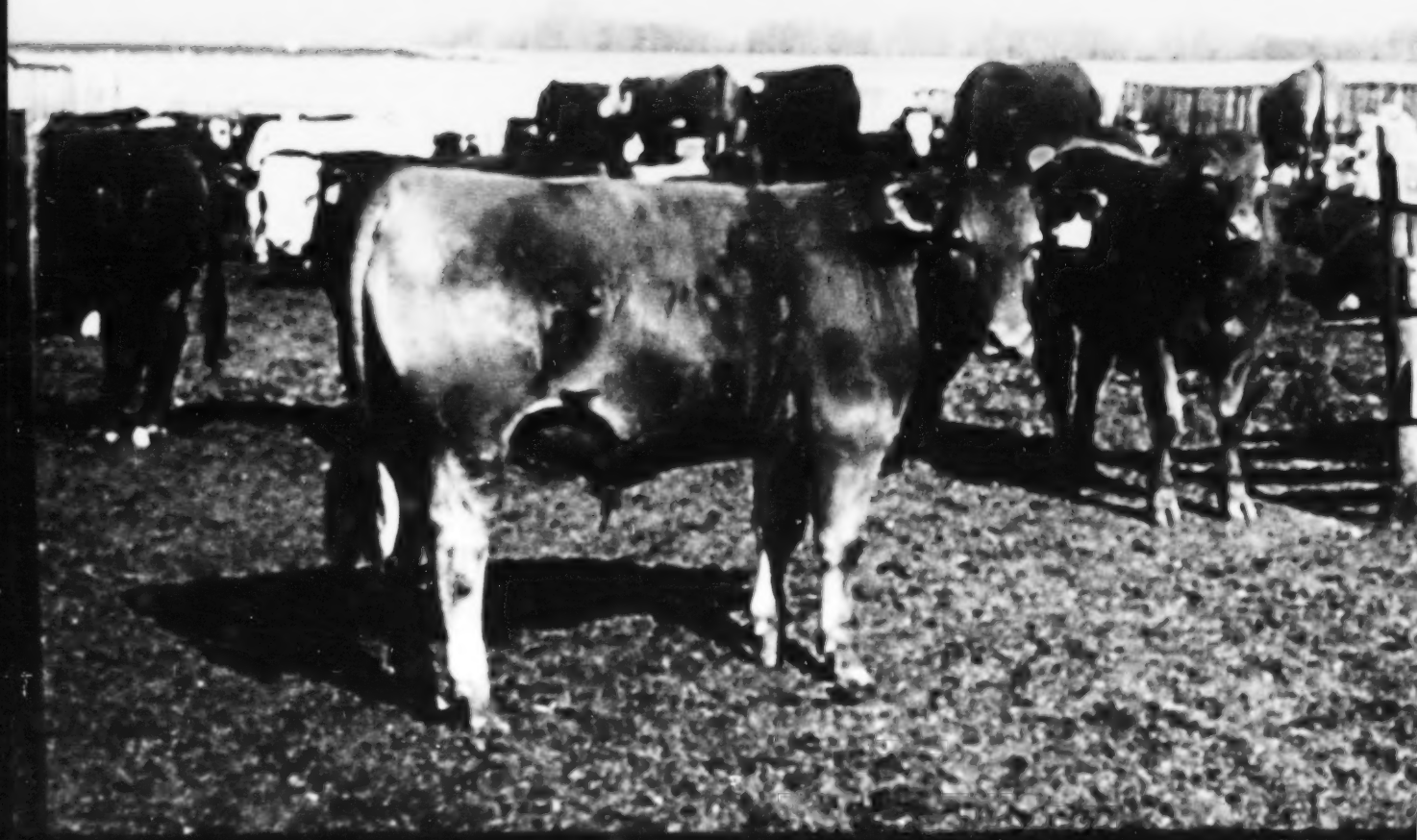
The MDS must be determined using Schedule 1 of the Standards and Administration Regulation. It only applies to existing neighbours on the date the application was received by the NRCB Approval Officer.

- The MDS will never be less than 150 metres, unless the requirement is waived in writing by neighbours or if the residence is owned or under the control of the owner or operator of the facility.
- The MDS requirement may be waived if neighbours within the MDS agree in writing to waive the requirement.
- The MDS does not apply if the affected residence is owned or is under the control of the owner or operator of the proposed operation.
- A CFO that is under the control of a single owner or operator, with manure storage facilities or manure collection areas located on adjacent land parcels, is considered to be one operation for the purposes of determining the MDS.
- A manure composting site associated with a CFO is a manure storage facility for the purposes of determining the MDS of the operation.
- The owner or operator of a CFO or a manure storage facility who holds an Approval, Registration or Authorization for the operation, must locate the operation and all facilities as per the submitted application.
- The neighbouring land uses in existence on the day an application is received by the NRCB are used in determining the required MDS.

WHO IS CONSIDERED AN AFFECTED PARTY

An "affected party" must be notified when an application for an Approval or Registraton for a CFO is received. They include:

- A person or municipality that is entitled, under the Water Act, to divert water from the river, stream or canal within 10 miles downstream, as measured along the water course, if any part of the CFO facility is located or is to be located within 100 metres of the bank of a river, stream or canal.
- The municipality where the CFO is to be located.
- A person who resides on or owns land that is within the greater of 0.5 miles or the MDS of a Registration-sized operation.
- A municipality or person who resides on or owns land that is within the following distances from the boundary of a parcel of land on which an Approval-sized CFO is located or is to be located:
  - 0.5 mile of a CFO that contains or is to contain 500 or fewer animal units.
  - 1 mile of a CFO that contains or is to contain 501 or more animal units, but fewer than 1,001 animal units.
  - 1.5 miles of a CFO that contains or is to contain 1,001 or more animal units, but fewer than 5,001 animal units.
  - 2 miles of a CFO that contains or is to contain 5,001 or more animal units, but fewer than 10,001 animal units.
  - 3 miles of a CFO that contains or is to contain 10,001 or more animal units, but fewer than 20,001 animal units.
  - 4 miles of a CFO that contains or is to contain 20,001 or more animal units.



AOPA includes standards for the siting and construction of solid and liquid manure storage facilities. This includes operators who store solid manure, composting materials or compost in a feedlot or in a livestock corral.

Seasonal feeding and bedding sites (wintering sites), and livestock corrals. Must be located 30 metres or more from a common body of water. If the distance is less than 30 metres, the owner or operator must construct an interceptor between the site or corral and the common body of water to divert runoff away from the common body of water. If an interceptor is not constructed, manure and bedding that accumulates at the site or corral must be moved to an appropriate manure storage facility or short term solid manure storage facility before runoff occurs at the site or corral (Standards and Administration Regulation, Section 4).

Short term solid manure storage. Short term means an accumulated total of not more than seven months over a three-year period. A short term solid manure storage must be located 150 metres or more from the nearest residence that is not owned or under the control of the person responsible for the storage, and it must be one metre or more above the water table (Standards and Administration Regulation, Section 5). It must be located one metre above the 1:25 year maximum flood level, set back 100 metres or more from springs and water wells, and set back 30 metres or more from a common body of water.

Manure collection area. The floor of a feedlot pen, the floor of a barn, the under-floor pit of a barn and a catch basin where manure collects are considered manure collection areas. They must be constructed to the same standards for groundwater and surface water protection as a manure storage facility (Standards and Administration Regulation, Section 7, 8 and 9).

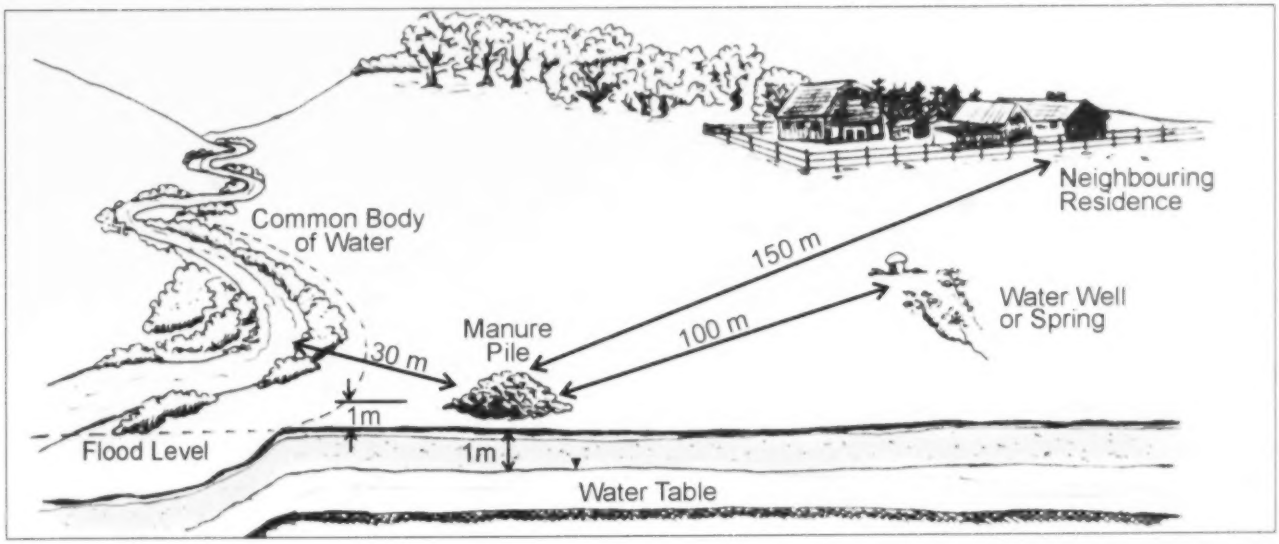
Surface water control systems. To prevent runoff from leaving a manure storage facility, run-on and runoff control systems must be constructed. These systems must not significantly alter regular water flow, must not affect or alter a non-flowing water body and must not be located on a fish-bearing water body. The system must be designed and certified by a Professional Engineer (Standards and Administration Regulation, Section 6).

Natural water and wells. The owner or operator of a manure storage facility or a manure collection area must not construct the manure storage facility or manure collection area less than 100 metres from a spring or water well. This does not apply if the owner or operator:

- Demonstrates to the NRCB, prior to construction, that an aquifer from which the spring rises or into which the water well is drilled is not likely to be contaminated by the facility.
- Implements a groundwater monitoring program (Standards and Administration Regulation, Section 7).

Common body of water. The owner or operator of a manure storage facility or manure collection area must not construct the facility or area less than 30 metres from a common body of water (Standards and Administration Regulation, Section 7). This does not apply if the owner or operator demonstrates to the NRCB, prior to construction, that either:

- The natural drainage from the facility or area is away from the



common body of water (Standards and Administration Regulation, Section 7), or;

- A berm or other secondary protection for the common body of water constructed by the owner or operator protects the common body of water from contamination (Standards and Administration Regulation, Section 7).

Flooded areas. The manure storage facility or manure collection area must include erosion control measures that can protect the facility from erosion, runoff, run-on and flooding.

- The 1:25 year maximum flood level at a manure storage facility or manure collection area must not be less than one metre below any part of the facility where run-on can come into contact with the stored manure.
- If the 1:25 year maximum flood level cannot be determined, the manure storage facility or manure collection area must be not less than one metre below any part of the facility where run-on from the highest known flood level can come into contact with the stored manure (Standards and Administration Regulation, Section 8).

Aquifer protection. The owner or operator of a manure storage facility or manure collection area must include a liner that lies below the bottom of the facility and above the uppermost aquifer of the site (Standards and Administration Regulation, Section 9).

Liners. A liner is required for all manure storage with the exception of a short term solid manure storage (Standards and Administration Regulation, Section 9). The Standards and Administration Regulation outlines the liner construction standards for feedlot pens, lagoons and surface water control systems.

Non-compacted, naturally occurring material:

- The top of the liner must be one metre or more above the water table of the site at the time of construction.
- The bottom of the liner must be one metre or more above the top of an aquifer.
- Liquid manure storage liners must be equivalent to 10 metres of non-compacted, naturally occurring material with a hydraulic conductivity of $1x10^{-6}$ centimetres per second or less.
- Catch basin liners must be equivalent to five metres of non-compacted, naturally occurring material with a hydraulic conductivity of $1x10^{-6}$ centimetres per second or less.
- Solid manure storage liners must be equivalent to two metres of non-compacted, naturally occurring material with a hydraulic conductivity of $1x10^{-6}$ centimetres per second or less.

Compacted, naturally occurring material:

- Solid manure storage liners constructed of compacted, naturally occurring material may as an alternative be constructed and maintained to have a thickness equivalent to 0.5 metres of material with a hydraulic conductivity of $5x10^{-7}$ centimetres per second and a minimum slope of two percent to prevent the collection of water.
- Liquid manure storage liners constructed of compacted, naturally occurring material must be constructed and maintained to provide the equivalent or greater protection to that of a 10 metre liner of non-compacted, naturally occurring material with a hydraulic conductivity of $1x10^{-6}$ centimetres per second or less.

Synthetic material:

- The bottom of synthetic liners must be one metre or more above the water table at the time of construction.
- Must provide the same or greater protection as liners described above (Standards and Administration Regulation, Section 9).

Manure storage volumes. The owner or operator of a CFO must size and construct manure storages to accommodate nine consecutive months of manure production, or fewer consecutive months if the NRCB approves a manure handling plan submitted by the owner or operator (Standards and Administration Regulation, Section 10).

Liquid manure containment. A freeboard no less than 0.5 metres is required on an open liquid manure storage facility. The owner or operator of an open liquid manure storage facility must provide a system of secondary containment for the liquid manure, if there is any possibility that it can be discharged into a common body of water. This will be determined by the NRCB.

Safety. The liquid manure storage facility must be secure from unauthorized access, and must have signs warning of the nature and danger of the facility placed at each entrance (Standards and Administration Regulation, Section 12).

Access. Year-round access to the liquid manure storage facility must be available (Standards and Administration Regulation, Section 13).

Side slopes of earthen liquid manure storage (horizontal to vertical). These have clear requirements:

- Inside slopes must not be steeper than 3:1.
- Outside slopes must not be steeper than 4:1.
- Freeboard and the outside slopes must have topsoil and a vegetative covering to prevent erosion.
- Shrubs, trees and deep-rooted plants near the sides of the facility must be removed (Standards and Administration Regulation, Section 14).

Erosion protection. Inside and outside walls must be protected from scouring and erosion, as well as wave and flood action. The filling, discharging and agitating areas must also be protected against scouring and erosion (Standards and Administration Regulation, Section 15).

Filling and sealing. The influent pipe for filling the primary cell of the liquid manure storage must be located within the bottom quarter of the structure (Standards and Administration Regulation, Section 16). Piping and other intrusions to the liner must be sealed to maintain the integrity of the liner (Standards and Administration Regulation, Section 17).

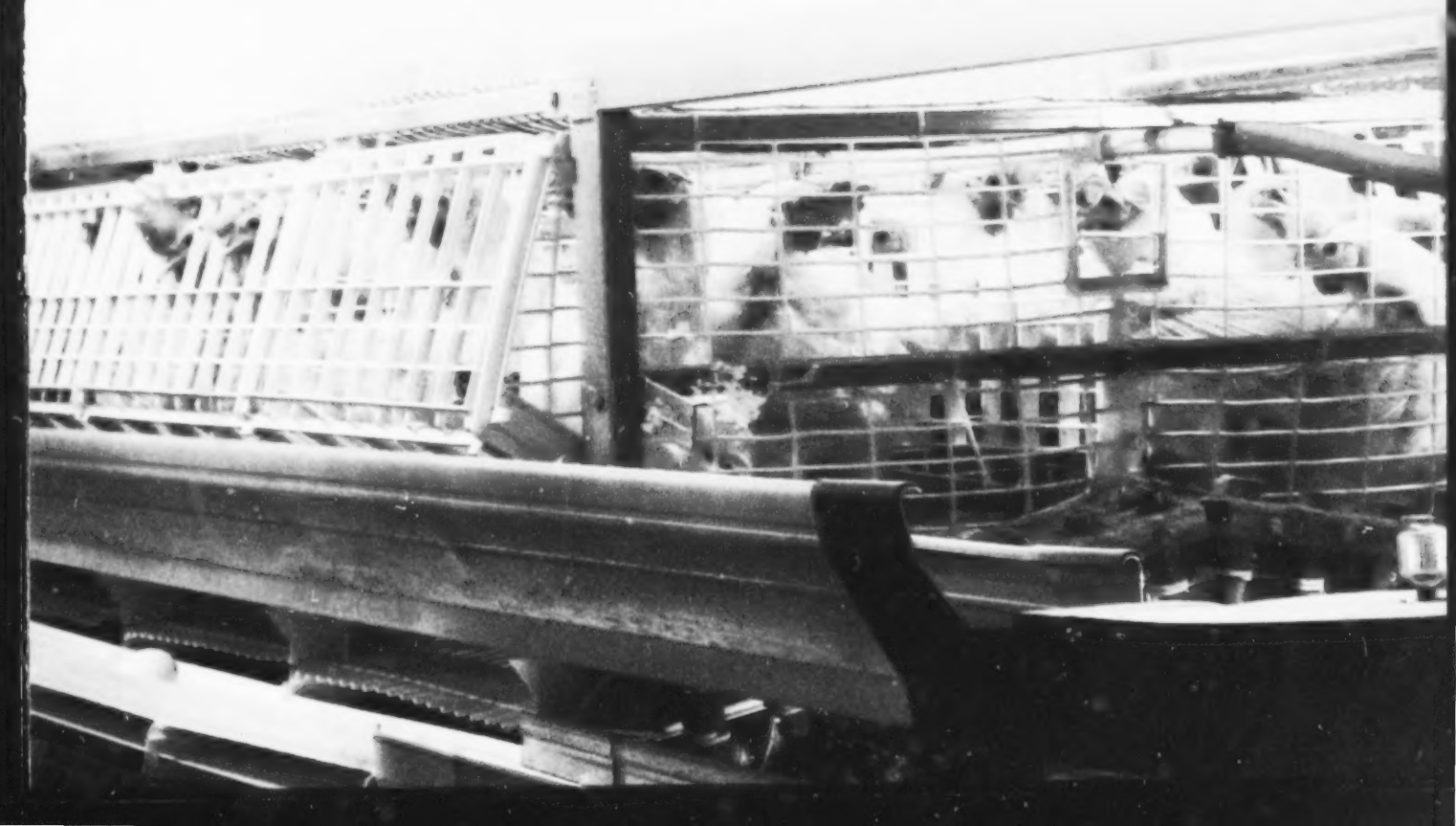
Leak detection. If required by the NRCB, the owner or operator of a earthen liquid manure storage facility must install and maintain a leakage detection system for the facility, consisting of at least one monitoring well up-gradient of the facility and at least two monitoring wells down-gradient of the facility to monitor for contaminants. These wells must be monitored at regular intervals (Standards and Administration Regulation, Section 18).

Catch basin. Must have a marker clearly visible to indicate the minimum volume required that will accommodate a 1:30 year one-day rainfall event (Standards and Administration Regulation, Section 19).

Dust and fly control. The owner or operator of a CFO or a manure storage facility must employ reasonable measures to control fly infestation levels at a location occupied by the operation, facility or site. The NRCB may require an owner or operator to use a specific dust or fly control program at a location occupied by the operation, facility or site (Standards and Administration Regulation, Section 20).

Unused and abandoned sites. The owner or operator of land or buildings that are a CFO, manure storage facility or seasonal feeding and bedding site that are not being used as such, must remove the manure, composting materials and compost from the land or buildings within 12 months or the time frame determined by the NRCB (Standards and Administration Regulation, Section 21).

Variances. A person can apply to the NRCB for a variance to the regulations provided the variance offers equal or greater protection than currently exists at the CFO or manure storage facility.



All livestock producers and other users of manure, composting materials and compost must meet the standards provided in the legislation for the application of livestock manure, composting materials and compost.

Manure, composting materials and compost can only be applied to arable land and must be incorporated within 48 hours, except when applied to forage crops, direct-seeded crops, and frozen and snow-covered soils. Manure, composting materials and compost can be spread without incorporation on forage or directly seeded crops provided the manure application is at least 150 metres from a residence or other building or structure occupied by people and the slope setbacks set out in AOPA are met. Manure cannot be spread on frozen or snow-covered ground from a CFO that has nine months of permanent storage available, unless the operation has an NRCB-approved manure handling plan.

The owner or operator of an agricultural operation must manage manure, composting materials and compost, taking into account soil type, soil nitrate-nitrogen levels, soil salinity levels and setbacks.

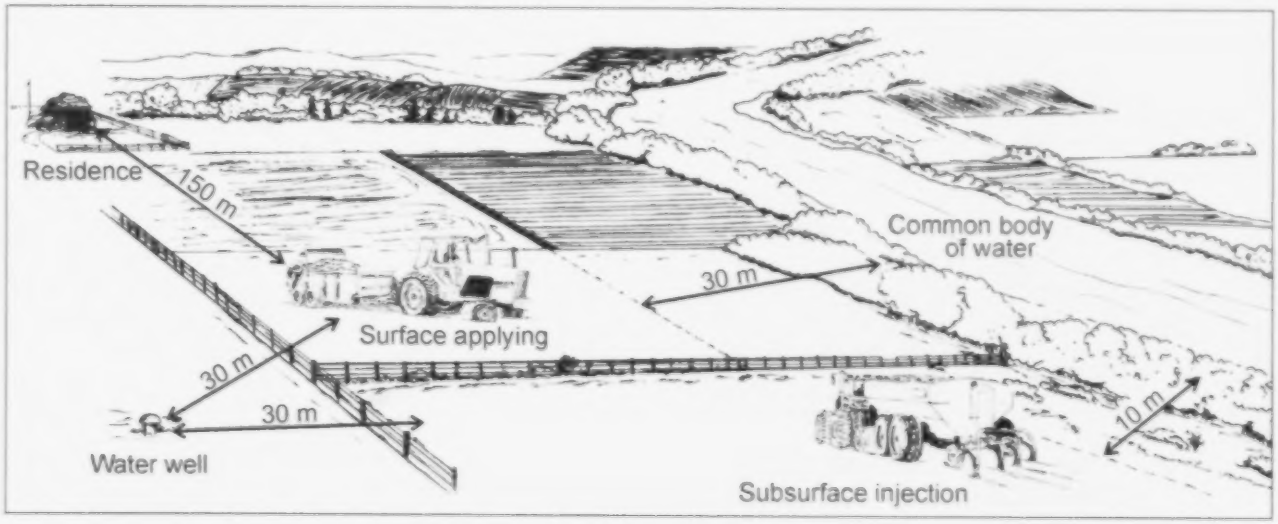
MINIMUM SETBACK DISTANCES FOR MANURE APPLICATION

These distances are required to reduce the risk of manure, composting materials or compost entering a common body of water, leaving the land on which the manure is applied or creating a risk to the environment. A person must not apply manure, composting materials or compost:

- Within 10 metres of a common body of water, if subsurface injection is used.
- Within 30 metres of a common body of water, if manure is surface-applied and incorporated within 48 hours.
- Within 30 metres of a water well.
- Within 150 metres from an occupied building if not incorporated within 48 hours (Standards and Administration Regulation, Section 24).

A person who applies manure, composting materials or compost on forage, direct-seeded crops, or frozen or snow-covered soils must meet the minimum setback distances for manure application based on the mean slope of the terrain (Standards and Administration Regulation, Schedule 3, Tables 1 and 2).

MEAN SLOPE	REQUIRED SETBACK DISTANCE FROM COMMON BODY OF WATER
Less than 4%	30 m
4% but less than 6%	60 m
6% but less than 12%	90 m
More than 12%	No application allowed



LAND BASE REQUIREMENTS

New/expanding CFOs applying for permits must have access to enough land to accommodate for proper manure application rates based on the soil nitrogen limits. The land base requirement can be determined by using the land base tables in the Standards and Administration Regulation, Schedule 3, or through a nutrient management plan.

Land base requirement tables. Based on a one-time application of nitrogen and not the amount that can be applied year after year to the same land. Calculations are based on livestock type, livestock size and soil type. For multi-year application of manure, the residual amount of nitrogen in the soil should be taken into account.

Nutrient management plan. Not all producers require a nutrient management plan (NMP) to apply manure or compost to land. An authorized NMP is required if a person does not have sufficient land base to meet the soil nitrate-nitrogen or salinity limits. The NRCB may authorize a person to apply manure to land in accordance with a NMP proposed by the person if the NRCB is satisfied that following the NMP will be beneficial to the soil (Standards and Administration Regulation, Section 26).

MANURE APPLICATION LIMITS

Unless they have an NRCB-approved nutrient management plan, operators must not apply manure, composting materials or compost to soil if:

- The soil salinity is more than 4 deciSeimens per metre (dS/m), as measured by the electrical conductivity from a soil depth of 0 to 15 centimetres (Standards and Administration Regulation, Section 25).
- The amount of manure applied will increase the soil salinity by more than 1 dS/m, as measured by the electrical conductivity from a soil depth of 0 to 15 centimetres (Standards and Administration Regulation, Section 25).
- The amount of manure applied will increase soil nitrate-nitrogen levels in 0 to 60 centimetre depth to a level that equals or exceeds the specified limits as indicated in Standards and Administration Regulation, Schedule 3, Table 3, Nitrate-Nitrogen Limits.

SOIL TESTING AND ANALYSIS

No soil testing is required for agricultural operations that apply less than 500 tonnes of manure annually. For agricultural operations that apply more than 500 tonnes of manure annually, manure, composting materials or compost must not be applied to soil until the soil is tested. Soil test information must be no older than three years. Soil testing analysis requirements are outlined in Standards and Administration Regulation, Schedule 3.

Soil test information must be no older than three years for developing a nutrient management plan, except for soil texture, which is a one-time analysis (Standards and Administration Regulation, Schedule 3).

LIQUID MANURE AND CATCH BASIN CONTENTS

The application limits for liquid manure and catch basin contents are the same as for solid manure, composting materials and compost. A person who applies liquid manure or catch basin contents through an irrigation system must ensure that the manure or catch basin contents do not create a risk to the environment by leaving the land to which they are applied, by entering a common body of water or by becoming return flow.

Liquid manure or catch basin contents cannot be applied through an irrigation system on a crop that is grown for human consumption and is commonly eaten raw (Standards and Administration Regulation, Section 27).

Manure Nitrogen Limits in Soil

SOIL	SANDY (> 45% SAND AND WATER TABLE < 4 m)	SANDY (> 45% SAND AND WATER TABLE > 4 m)	MEDIUM AND FINE TEXTURED SOILS
Brown	80 kg/ha (75 lb./ac.)	110 kg/ha (100 lb./ac.)	140 kg/ha (125 lb./ac.)
Dark Brown	110 kg/ha (100 lb./ac.)	140 kg/ha (125 lb./ac.)	170 kg/ha (150 lb./ac.)
Black	140 kg/ha (125 lb./ac.)	170 kg/ha (150 lb./ac.)	225 kg/ha (200 lb./ac.)
Luvisolic (Grey wooded)	110 kg/ha (100 lb./ac.)	140 kg/ha (125 lb./ac.)	170 kg/ha (150 lb./ac.)
Irrigated	180 kg/ha (160 lb./ac.)	225 kg/ha (200 lb./ac.)	270 kg/ha (240 lb./ac.)

RECORD KEEPING

CFOs, custom manure applicators, cow/calf producers and others who apply, transfer, or receive more than 500 tonnes of manure, composting materials or compost per year must keep records for a minimum of five years (Standards and Administration Regulation, Section 28).

A CFO must record:

- The name and address of a person to whom control of 500 tonnes or more of manure, composting materials or compost per year is transferred, the date of the transfer and the volume or weight transferred.
- The volume or weight of manure, composting materials or compost production.

A person who transfers control of manure, composting materials or compost to another person must record:

- The name and address of a person to whom 500 tonnes or more of manure, composting materials or compost per year is transferred.
- The date of the transfer.
- The volume or weight of manure, composting materials or compost transferred.

A person who receives or removes 500 tonnes or more of manure, composting materials or compost per year must record:

- The volume or weight of manure, composting materials or compost received or removed.
- The name and address of the person from whom manure, composting materials or compost is received or removed.
- The date of the receipt or removal.

A person who applies 500 tonnes or more of manure, composting materials or compost per year to land under the person's control must record;

- The name and address of the person from whom manure, composting materials or compost is received, the date it was received and the volume or weight received.
- The legal description of the land to which manure, composting materials or compost is applied.
- The area of the land to which manure, composting materials or compost is applied.
- The date the manure, composting materials or compost is applied.
- The volume or weight of manure, composting materials or compost applied.
- The application rates of manure, composting materials or compost nutrients and fertilizer by field and year.
- The dates of application and incorporation and the methods used for each field.
- The soil test results by field for the nutrients specified in Schedule 3 (Standards and Administration Regulation).

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2004 Reference Guide: Agricultural Operation Practices Act (AOPA) (Agdex 096-1)

Existing Operations: How they are affected (Agdex 096-2)

Manure Management Record Keeping (Agdex 096-3)

Wintering Sites and Livestock Corrals (Agdex 096-4)

Manure Spreading Setback Distances (Agdex 096-5)

Manure Management for Cow/calf Producers (Agdex 096-6)

Manure Management for Horse Owners (Agdex 096-7)

More Information

Alberta Agriculture, Food and Rural Development (AAFRD)

Alberta Ag-Info Centre
Toll-Free: 1-866-882-7677
Web site: www.agric.gov.ab.ca
(click Search and type in "AOPA")

Natural Resources Conservation Board (NRCB)

Toll-Free 24-hour response line 1-866-383-6722
Web site: www.nrcb.gov.ab.ca

Dial 310-0000 first for a toll-free connection, then dial one of the following NRCB regional offices:

Phone: (403) 381-5166
Fax: (403) 381-5806

Phone: (403) 340-5241
Fax: (403) 340-5599

Phone: (780) 939-1212
Fax: (780) 939-3194

Phone: (780) 835-7111
Fax: (780) 835-3259

Farmers' Advocate of Alberta

Phone: (780) 427-2433
Fax: (780) 427-3913
Web site: www.agric.gov.ab.ca
(Search for "Farmers' Advocate")

Queen's Printer Bookstore

For copies of AOPA legislation
Phone: (780) 427-4952
Web site: www.gov.ab.ca/qp

DISCLAIMER: This guide summarizes important aspects of the Agricultural Operation Practices Act and the Natural Resources Conservation Board process. The document is not intended as legal advice, but as an interpretive document to the Agricultural Operation Practices Act and regulations. The responsibility is on the producer/operator to ensure due diligence has been followed. The Agricultural Operation Practices Act and Natural Resources Conservation Board Act, and regulations under these Acts should be referred to for legal definitions and for the specific requirements at each stage of the process. This document has been reviewed by the Natural Resources Conservation Board and Alberta Agriculture, Food and Rural Development.

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